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(54) DIAMOND SINTERED COMPACT AND ITS PRODUCTION

(57)Abstract:

PROBLEM TO BE SOLVED: To produce a high strength diamond sintered compact excellent in chipping and heat resistances by sintering a powdery mixture of powder of boron oxide or boric acid with powder of diamond or nondiamond carbon under specified conditions.

SOLUTION: Powder of boron oxide and/or boric acid as a sintering aid is mixed with powder of diamond and/or nondiamond carbon and the resultant powdery mixture is sintered by holding under conditions of pressure and temp. in a region in which diamond is thermodynamically stable to obtain the objective sintered compact consisting of 0.1-30vol.% material made of a boron-oxygen compd. and the balance diamond. In the case of <0.1vol.%, the suitability of diamond particles to bonding, that is, sintering is deteriorated. In the case of >30vol.%, strength and wear resistance are deteriorated by the effect of an excess of the boron-oxygen compd.

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